The Fundamental Information Tendency (FIT)

A High-Level Cross-Domain Framework of Flow, Constraints, Lag, and Recursion

Luke Doel
Independent Researcher

March 2026

Abstract

Across physical, biological, cognitive, computational, ecological, economic, and social systems, a recurring structural pattern is observed: information (or its proxies) flows through constraints, producing inevitable lag. This lag generates gradients that drive behaviour, which in turn feeds back as the next input state. When lag is appropriately tuned, systems achieve stability and optimal performance. When mismatched, they destabilise or stagnate.

The Fundamental Information Tendency (FIT) proposes that this recursive lag-gradient dynamic is a universal organising principle. FIT does not replace domain-specific theories. It offers a unifying lens that reveals why similar patterns of stability, adaptation, and emergence appear across scales — from neural firing to galactic rotation curves, from market cycles to trauma responses.

This document serves as a high-level principles summary. Detailed mechanisms, quantitative validations (including RFIT fits to SPARC data), governance protocols (DHP), and psychological models (Archetype Codex) are contained in the separate public-domain archives.

1 Introduction

Different fields use different languages, yet the underlying dynamics often look strikingly similar. Audio engineers speak of attack and release times. Neuroscientists speak of refractory periods. Traffic engineers speak of headway. Astrophysicists observe rotation curves that refuse to follow Newtonian predictions. In each case, flow meets constraint, lag appears, and behaviour emerges.

FIT suggests this is not coincidence. It is the signature of a deeper informational process:

Flow + Constraints → Lag → Gradients → Behaviour → Next State

The loop is recursive. The behaviour generated by the gradients becomes the new input. This single cycle appears across domains and explains both stability and change without requiring new fundamental forces.

2 Core Principles

2.1 Information as the Common Substrate

All systems can be viewed as information (or energy/matter acting as information carriers) flowing through constraints.

2.2 Lag is Inevitable and Generative

Lag arises automatically at every constraint. It is not error — it is the mechanism that converts raw flow into structured behaviour.

2.3 Gradients as the Causal Bridge

Lag across a system is rarely uniform. The resulting differences create gradients (spatial, temporal, energetic, or informational). These gradients drive observable behaviour.

2.4 Recursion Closes the Loop

Behaviour does not dissipate; it becomes the next input state, sustaining the cycle. This recursive structure is what allows simple lag effects to produce persistent complexity.

2.5 Tuning Matters

- Too little lag → instability or oscillation
- Too much lag → stagnation
- Tuned lag → stable, adaptive performance

3 Cross-Domain Evidence

The same cycle appears reliably:

- **Neural systems**: Refractory periods create firing gradients → stable cognition or pathological loops
- **Audio & signal processing**: Attack/release lag shapes waveform gradients → clean or distorted output
- **Traffic & logistics**: Spacing and buffering produce flow gradients → congestion or smooth throughput
- **Markets & economics**: Supply-chain and decision lags generate price gradients → booms, busts, or equilibrium
- **Ecology & climate**: Generational and thermal lags create population and energy gradients → stable ecosystems or tipping points
- **Astrophysics (RFIT)**: Information-propagation delays across mass distributions generate effective acceleration gradients → MOND-like rotation curves and external field effects (see separate RFIT archive for SPARC validation)

In every case, the pattern is the same: lag is not noise; it is structure.

4 Predictions

FIT makes the following testable claims:

1. Any system with flow and constraints will exhibit measurable lag.
2. Lag mismatches (too little or too much) will reliably produce instability or stagnation.
3. Tuning lag to the system's natural flow rate will improve performance across domains.
4. Systems with analogous lag-gradient structures will display analogous emergent behaviours, even across different substrates.

5. In the low-acceleration regime, informational lag in relativistic substrates will produce MOND-like and external-field-effect behaviour (already quantitatively supported in RFIT archive).

6. Recursive feedback will cause certain lag effects to persist or amplify over time (e.g., trauma loops, market bubbles, ecological overshoots).

5 The Fundamental Information Tendency (FIT)

Statement Systems behave as if they are processing information through constraints. Lag is the inevitable result. Gradients formed by lag drive behaviour. Behaviour recursively becomes the next state.

FIT is:

- Mechanistic
- Falsifiable
- Cross-domain
- Compatible with existing physics and domain theories
- Additive, not replacement

6 Implications

- **Scientific**: Provides a common language for comparing stability and emergence across fields.
- **Engineering & optimisation**: Lag-tuning becomes a universal design principle.
- **Psychology & governance**: Trauma, conflict, and social instability can be understood as mismatched lag-gradient dynamics (see DHP archive).
- **Physics**: Offers a pathway to emergent explanations for galactic dynamics without new particles (see RFIT archive).

7 Conclusion

The coherence of the flow–constraint–lag–gradient–recursion pattern across vastly different systems suggests a deep structural tendency in nature. FIT does not claim to be a final theory. It is a high-level organising principle that sits above — and connects — existing models.

Detailed mechanisms, mathematical derivations, SPARC validations, governance protocols, and psychological tools are available in the public-domain archives:

- Everything Is A Prompt (master RLG framework)
- Fundamental Information Tendency / RFIT (physics validation)
- Dynamic Harm Principle (social & psychological layer)

All are released under CC0. Fork, test, critique, or improve freely.